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THE U. P. A. S. I.

(INCORPORATED)

Contents.

The Scientific Officer publishes in this week's *Chronicle*, a valuable article on Bees and Coffee Fertilization. The whole is interesting, but that part dealing with the presence of bees and insects during blossom and his observation of the area defined at a subsequent visit, eminently so.

It is hoped that the article on Rinderpest may be of use to planters and others who herd cattle for manurial and dairy purposes. The remedy recommended is worth a trial, and permanganate of potash is easily procurable and should form a part of a planters' outfit.

A short account is given of other countries growing coffee, showing how extension is going on.

Doctor Huber's interesting report is concluded in this number, and columns are published in it, showing the production from 1905 to 1911 of rubber from Ceylon and Malaya, together with estimates of future production from both countries.

We have been asked by the Agent of the Bank of Madras to notice that the Bank's Reserve is now Rs. 71,00,000.

As a good many of our members correspond with Mr. Ernest Green, Entomologist to the Government of Ceylon, a post that he has resigned, it may interest them to know, in case they wish to communicate with him, that until further notice after February 11th, his address will be Mole Hall, Berstead, Kent.

We have been favoured with a copy of *Planters' Pic*, which is illustrated harmoniously. It deals with the light and the gruesome, both well done, and it would be invidious to select one story in preference to another. The article on the Nilgiris is charmingly illustrated. We wish the Editors all success in their venture, and that the merits they have selected will be more than attained.

Extracts of a report written by Consul Osborne of Havre are published and will be continued in our next issue. They could not be published in extenso this week as the remaining portion is very full of statistics which it is thought advisable to print so that they can remain on record and be handy as a reference. They bring together figures not easily to be found in so compact a form. Much other useful information too is given.

Scientific Officer's Papers.**CXV.—BEES AND COFFEE FERTILISATION.**

At the Annual Meeting of the U. P. A. S. I. in 1911 the question of the value of Bees in Coffee districts and the effect of their gradual destruction was raised. While discussing the subject of the quality and curing of coffee I pointed out that, "It is a common experience among fruit growers in the Tropics that fruit does not set, and that the crop is out of all proportion to the show of blossom. Mr. C. Driberg dealt with this matter in a paper read before a Meeting of the Ceylon Board of Agriculture last April, and made some remarks which are worth carefully thinking about by coffee planters. In the course of his address he said:—"The work of insects in the pollination of flowers is not appreciated in this country. Bees, moths, wasps and ants all assist in carrying pollen from flower to flower. Of all these the bee is, of course, of the first importance. The position in which nectar is stored is such as to bring the body of the bee seeking it in contact with both stamens and pistil, so that pollen grains sticking to the hairs on the body of the bee are distributed as the bee flits from flower to flower gathering both honey and bee-bread. 'The usefulness and the importance of the bee,' says a writer on the subject, 'can hardly be overestimated; and successful orchard practice will never result until the work of the bee is recognised practically by the establishment of bee colonies in every orchard district.' It is often said that wet weather at the time of flowering is followed by a reduction in the crop owing to rain washing off the pollen. This according to reliable observers, requires further evidence, and the cause of non-setting is rather to be attributed to the fact that bees and other insects are prevented from paying regular visits to flowers under rainy conditions. There is no reason whatever why everyone who is cultivating fruit-producing crops should not keep a few hives of bees. Bee-keeping, apart from its value in aiding in fertilisation, is one of the pleasiest hobbies, and in indulging in it one can always rely upon securing a supply of pure honey for his table."

"Darwin's historic work has proved that self-fertilisation tends to weaken the resultant off-spring; I think that it is more than possible that self-fertilisation may reduce the quality of the coffee bean. That our coffee is largely self-fertilised there can be no doubt, and I understand that the number of bees to be found on the coffee estates in general has, for one reason and another, been reduced during the last twenty years. I suggest that it is well worth while to try the effect of Bee-keeping in connection with coffee. Honey and beeswax fetch their prices in India and the industry should, in any case, prove a self-supporting one, and the effect upon the quality of the coffee should there be any, would soon make itself apparent."

After some discussion the following resolution proposed by the Delegate for the Shevaroyis, and seconded by the Nilgiri Delegate was passed:—

"That Government be asked through the U. P. A. S. I. to pass some rules prohibiting the destruction of bees in planting districts."

There has been a very marked diminution in the number of bees in coffee planting areas and it is these planting areas which the Government was asked to protect. The Association did not urge that any impediments should be placed in the way of collection of bees-wax or honey, but merely that measures should be taken to prevent, or diminish, the destruction of bees themselves which occurs at present when their produce is secured by means of unskilled methods.

What was asked for was that Government should enforce rules in the coffee planting areas which should ensure that the bees were not destroyed when their produce was taken. It is quite easy to take honey and wax without destroying the bees and the present method is adopted because it entails the minimum amount of trouble.

The reply of the Government to this request was published in the *Chronicle*, (Vol. VI, p. 418) and the Government Entomologist was asked to investigate the matter. The Government Botanist and Entomologist pointed out that it had not been proved that bees are essential for the pollination of coffee, and one of the objects of the Entomologist's investigation was to determine this point.

Coffee can of course be self-fertilised and it very often is; but the point which must not be lost sight of is the influence of cross fertilisation upon quality. It is quality and not quantity which is being chiefly considered with regard to the presence or absence of bees. It may be found that other insects besides bees play an important part in the act of cross fertilisation and this also needs investigation. During the few days the coffee is in blossom, should climatic conditions be favourable, the fields will be found to be alive with insects of many kinds all visiting the coffee flowers. How many of these can actually fertilise it, however, and how many are merely robbing it of honey without being of any direct use is a point which remains to be proved by experiment. It is also possible that moths and night flying insects play then part.

It is noticeable, however, that insect visits do improve the actual yield. During the blossom season last year there was a very marked absence of insects for some reason or other, and there has been everywhere a very small crop. I happened to be on a certain estate in Coorg when the blossom was out, and while walking round with the manager we noticed that on one particular area, the limits of which we roughly defined for future observation, there were a remarkable number of bees and other insects working on the flowers. This was the more noticeable since on the majority of the estate insects were conspicuously absent. I had occasion to visit this same estate a few months ago, and on examining this particular area it was found that it was the only place on the estate where there was any crop that could be called heavy. The difference was probably one of at least two hundred weights per acre.

In a recent Circular on Bee-Keeping published by the Experiment Station of Porto Rico it is stated that:—

"The coffee planters particularly have become interested in the raising of bees, not for the honey but because bees are very useful in pollinizing coffee in seasons when there is a great amount of rain during bloom. The pollen in the coffee is carried by the winds from flower to flower, but if there is much rain, very little bloom is set as only the dry pollen is carried by wind; during rainy periods the bees visit the flowers and distribute the pollen in their honey gathering. Coffee plantations also afford excellent fields for bees to work in as honey is obtained from the coffee shade as well as from the coffee itself."

In the G. O. referred to above it is stated that, "the true solution of the problem appears to be that the planters should keep their own bees and should prevent any destruction of wild bees on their estates." This would no doubt be a remedy, and experiments in this direction have already been tried in some places. The difficulty is, however, that the active bee will not live in captivity in any form of hive, while imported bees are attacked by

diseases which renders their establishment a matter of extreme difficulty. Experiments at Pusa bear out these two facts and the Imperial Entomologist stated in the *Indian Agricultural Journal* of October 1911 that "at the present time there is no race of bees which we can recommend to would-be bee-keepers in the plains of India." The Government Entomologist was asked by the Government to investigate the problem of the keeping of hive bees in the planting districts of Madras.

Unfortunately the new Entomologist, Mr. T. Bainbrigge-Fletcher, joined his appointment in the Madras Presidency too late in 1911 to see the coffee in blossom. At the Annual Meeting of the U. P. A. S. I. in 1912 a resolution was passed reminding the Madras Government of their promise that the Entomologist should investigate this subject, and the matter has been taken up.

The Entomologist expressed a wish to pay a preliminary visit to those coffee districts interested in this matter during October and November in order that he might get an idea of the conditions obtaining on the estates and make plans for carrying out of certain necessary experiments. He pointed out that as the coffee is in blossom for such a short time a plan of action should be decided upon sometime beforehand.

Consequently it was arranged for Mr. Fletcher to visit the Bababudin district of Mysore, the Shevaroy Hills and Coorg. His reports on these visits have been received, and by the courtesy of the Director of Agriculture will be published in the next number of the Chronicle.

These reports contain much that is of great interest to the planters in the districts concerned and though no plans or experiments are laid down it is hoped that these will be received before the coming blossom season, and that the Entomologist will be able then to continue his investigation and arrive at some definite conclusion as to whether the legislation asked for by the U. P. A. S. I. is necessary or not.

RUDOLPH D. ANSTEAD,

Planting Expert.

Some of the sections of the F. M. S. Labour Code, which came into operation on the 10th ultimo provide the following, which make employers of labour in the Colony almost wish for some of the drastic measures which a truly oligarchic Government can enact:—For the failure to fulfil a contract or carry out a task given to him, or for gross neglect of duty, as in the case of carelessness or drunkenness, or for quitting the service of an employer without leave, the labourer may incur a fine not exceeding twenty-five dollars. And any labourer, who shall without reasonable cause fail to perform at least twenty days' work in any one month, is liable to imprisonment of seven days. Any labourer, absent from his employment during working hours without reasonable excuse, is liable to a fine not exceeding fifty cents.

Other sections authorise employers to arrest labourers and have them prosecuted for failure to fulfil contracts.—*Indian Planters' Gazette and Sporting News.*

RINDERPEST.

Our attention has been drawn to an article that appeared in the *Penang Gazette* referring to a valuable paper in the *Journal of Comparative Pathology and Therapeutics* by Major G. K. Walker, F.R.C.V.S., of the Indian Civil Veterinary Department which deals with the treatment of Rinderpest with permanganate of potash. In outlying Districts where veterinary aid is not procurable many valuable cattle have been lost to the planter through want of the necessary medicines near at hand at the moment of attack. Permanganate of potash appears a simple remedy and very few medicine chests are without a supply. Major Walker says that "Permanganate of potash in solution does not appear to have been tried hitherto. It is well-known to be an excellent antiseptic and powerful oxidising agent." It has been usual to try internal doses of antiseptics in cases of rinderpest and carbolic acid has been the favourite remedy "as it is portable and easily administered but it is doubtful if it has much effect."

In December last, when on tour, Major Walker was able to try the drug on two cases of rinderpest that came under his notice, and the results were so favourable that further experiments were carried out under his orders.

With regard to the original cases it suffices to say that one animal was a young male buffalo with all the typical symptoms of rinderpest except diarrhoea. One dose of $\frac{1}{4}$ dram of permanganate of potash dissolved in 5 pints of water was administered. The animal appeared to derive immediate benefit and quickly recovered. The second case, a valuable bullock, had diarrhoea in addition to other characteristic symptoms. This animal recovered after one dose of $\frac{1}{4}$ a dram of the drug in a gallon of water. Other cases occurred which were successfully treated. In one case a bullock, 14 drams of the drug were administered. Other cases were tried in the Punjab, with such satisfactory results, that the villagers gained such confidence in the treatment that they asked for it, and eventually consented to have their remaining animals inoculated with protective serum to which they had been much opposed originally. There is also Haemorrhagic Septicaemia (caused by a germ in the blood which produces this disease). The symptoms, by which this fell disease is recognised, are off feed, throat swollen, discharge from eyes and nose, respiration accelerated. The usual mortality attacked by this disease in India is between 90 and 100 per cent. but cases have been treated successfully and hopefully, with a solution of permanganate of potash. It is probable that buffaloes, which are more susceptible to this disease than cattle, will be found to require a larger proportionate doses than cattle. The drug is given in large quantities of cold pure water acidulated with vinegar as in the rinderpest cases. With cattle and buffaloes in rinderpest from 1 to 2 drams is the usual dose; but in Haemorrhagic Septicaemia from 1 to 3 drams of the drug are given in the case of buffaloes.

No definite conclusions can be drawn from these experiments as they are in their infancy, but they are well worth a trial. It remains to be seen if the best results are to be looked for from one large initial dose; or from repeated moderate doses. In the case of Haemorrhagic Septicaemia there is rarely time for more than one dose. As it requires special skill to perform hypodermic injections, it is better to administer the solution by the mouth. The native agriculturist is conservative in his obstinacy in accepting new treatment for his cattle, but if it is proved to him that medicinal treatment is doing good when disease is actually prevalent, he is ready to accept it, but requires immense persuasion (and that not always successfully) to take protective measures.

COFFEE.

Last week we published an account of the Coffee Roasters' Convention in New York and we believe that everything dealing with the Coffee Industry must be of interest to all coffee planters of Southern India, especially when in the near future they must expect more competition, and would like to know from what other countries, such competition is likely to arise. No one can foretell when Brazil, alone, will produce another record crop, sufficient to supply the world's demand, and necessarily bring down the present high prices, to the level of a few years ago. With the present prosperity in Coffee, planting is extending. Now is the time to provide for the inevitable day of low prices, by economy in cultivation, by selection of seed, and by the unstinted help and advice of the Scientific Department. The following Report is by the Governor of Porto Rico.

Promoting Porto Rico Coffee in the United States.

"The coffee crop of 1912 (in Porto Rico) was the largest in the history of the industry and sold at profitable prices, substantially a third higher than those of the years 1909-10 and several years preceding it. The value of coffee sold abroad during 1911-12 was \$6,734,913, furnishing one-eighth of the receipts from foreign commerce. With the prosperity attending this industry, it is being extended throughout the mountains of the island, the soil and climate of which are especially adapted to the successful culture of the highest grades of coffee to be found in the world. Heretofore this product has gone principally to France and Cuba, where it is highly prized by the connoisseurs of those countries. Porto Rican coffee has never been known commercially in the United States because first, it commanded a ready market at the highest prevailing prices abroad, and, second, the small quantity sent to the United States has not been placed upon the market in form to be identified. It is now, however, being introduced into the American market through the commercial agency of the Government of Porto Rico at 569 Fifth Avenue, New York, and may be purchased of the principal grocers of New York City in hermetically sealed tins under the special guarantee of the Porto Rico Association. The Government has taken an active interest in this undertaking, through its commerce commission, in the belief that if it were known that one of the finest coffees produced in the world is grown on American soil it would be appreciated by American consumers looking for the best, and find a steady demand in the home market where it will not be subject to foreign tariff caprice."

A New Coffee Zone in Brazil.

The Rio Janiero Correspondent of the London *Economist* writes:—

"In the course of the next few years the output of coffee will be increased by the production from a new coffee zone situated in the State of Parana. The lands for its cultivation are located in the Paranapanema, Tibagy and Ivahy valleys, covering an extension of about 1,600 square leagues and bordering on the State of Sao Paulo. The climate is favourable and the land consists chiefly of the rich "terra roxa," or red earth, so eminently suited to coffee cultivation.

The districts of Jacarezinho and Ribeirao Claro contain at present about 1,200,000 coffee trees, of which nearly 50 per cent. have already attained the necessary producing age. According to official advices, the present crop will not be large, and it is anticipated that practically the whole production will be consumed locally, but in four or five years time there should be a good surplus for export, as the total number of trees planted by the end of

the current year will amount to about four millions. If sufficient labour were obtainable this figure might have been exceeded, as considerable interest is being manifested in this new district, and land is being bought up rapidly at relatively reasonable prices. There is no doubt a promising future in store for the district, and as soon as railway communication is available its value will be enhanced considerably. The Sorocabana Railway so far only serves a very small part of the zone, but extensions are shortly to be constructed which will tap that section of the State effectively."

Consular Agent S. H. Wright, at Medellin, says that coffee is quite extensively grown in the districts of Fredonia, Caldas, Abejorral, Angelopolis, Heliconia, Titibiri, Ituango, Penol, San Carlos, San Roque, and San Luis of that Department. The principal merchants and commission houses of Medellin export the product. Statistics regarding production, acreage, etc., he says, are impossible to obtain. The exportation for the year 1910, the latest statistics available, amounted to 100,378 sacks, less than for the three previous years. However, the actual acreage is increasing and this is an important industry now.—*The Spice Mill*.

Costa Rica's Important Coffee Industry.

From a contribution on "Costa Rica's Exports" by Lincoln S. Cornish, we take the following about coffee:—

Coffee was exported from Costa Rica last year (1911) to the extent of 206,609 bags. On the beautiful uplands of this republic is grown some of the very finest coffee which all the Americas produce and that is saying a good deal. It fetches top prices in the European markets, which are the chief appreciators of this delicious but high-priced Central American coffee. It is said that the United States will not pay the price for high-grade coffee, purchasing instead the less aromatic Brazilian bean.

Whether this is the reason or no, the fact remains that the United Kingdom and her colonies took last year 81.98 per cent. of Costa Rica's coffee. The United States took but a small fraction; to be precise, exactly 8.06 per cent. of it; Germany bought 7.67 per cent., France 2.16, while all other countries disposed of the 0.13 that remained. Of course, this 207,000 bags of Costa Rican coffee does not mean the entire product; a large quantity is consumed annually in the country, where every tiny adobe or cane dwelling in the most rustic village has its materials for making an excellent cup of coffee.

Limón is the chief shipping point for coffee; from this port went 191,314 bags, Punta Arenas accounting for only 76,284 bags.

The proportion of coffee shipped in the husk is large, amounting to 63.07 per cent. of the total. There has long been an entirely unreasonable preference on the part of European buyers for a brightly coloured bean, and this effect is better produced when the coffee is shipped in the husk and cleaned (by removing the inner case covering the two beans, and washing and polishing them) in Europe. London maintains enormous cleaning apparatus to treat coffee shipped in the husk, which is there "made pretty" for the buyers. This prejudice is now yielding to reason, which declares that it is more economical to clean the coffee on the spot in Costa Rica, as freight is then less and labour is cheaper; also it has been demonstrated that the cleaned bean loses nothing of its flavour in transit, although it does not reach the London markets with so bright an appearance. Buyers have lately taken to judging coffee by its flavour instead of its presentment in the sample trays, with the result that an increased quantity of coffee cleaned in the beneficium of Costa Rica is likely to be shipped annually.—*The Spice Mill*.

Coffee at Havre.

The *Spice Mill* publishes a long article (a portion of which we extract) on the Coffee Trade of Havre, which is the principal coffee port of Europe, from Consul John Hall Osborne, Havre, France, who writes on the above subject as follows:—

The retail prices for this great staple being a matter of concern to millions of consumers, information in regard to the important commercial transactions of this market should be of general interest, since they exercise considerable influence in the establishment of prices throughout the world. The people of the United States are more concerned than any other nation in view of the fact that their consumption of coffee is far in excess of other countries. It is estimated that in 1911 the United States consumed 833,066 000 pounds of coffee, or a per capita allowance of 9 pounds, while Germany, which is next on the list, consumed only 375,883,000 pounds, or a per capita of less than 6 pounds.

DISTRIBUTION OF THE WORLD'S SUPPLY.

According to statistics compiled by the Syndicat du Commerce des Cafes of Havre the total visible supply of the world on October 1, 1912, was 12,161,000 sacks of 110.23 pounds each; distributed as follows: Europe stored in Havre, 2,108,000; Hamburg, 1,472,000; Antwerp, 901,000; Netherlands, 320,000; Trieste, 337,000; England, 245,000; Marseilles, 123,000; Bremen, 106,000; Copenhagen, 77,000; Bordeaux, 46,000; total, 5,705,000 (of which 4,533,000 sacks were Brazilian coffee); *en route* to Europe, 823,000; total for Europe, 6,528,000. United States—stocks, 2,058,000; *en route*, 591,000; total 2,649,000 (of which 1,742,000 sacks were Brazilian coffee). Brazil—stocks at Rio, 335,000; at Santos, 2,609,000; at Bahia, 20,000; total 2,984,000.

The commercial movement of coffee at Havre during the period from January 1 to October 11, 1911 and 1912, respectively was as follows, in sacks: 1911—imports, 897,049, exports 1,215,621; 1912—imports 1,076,788 exports 1,286,965.

VALORISED COFFEE AT HAVRE.

The relation of Havre to the valorization plan of the Brazilian Government is important. A quantity equal to more than half of the 4,800,000 bags of coffee purchased by the Brazilian States when the system was inaugurated has been held in bond in Havre and Marseilles since 1907 by the valorization Committee. The bulk has been stored at this port. The amount held here on December 31 of each of the last four years and on October 15, of the current year was: 1909, 1,841,000 sacks; 1910, 1,751,576 sacks; 1911, 1,526,000 sacks; 1912, 1,311,600 sacks.

It will be seen from the foregoing that the local stock of valorized coffee has been reduced since 1909 by 529,400 bags, or 28.7 per cent. It is stated that this reduction represents the actual sales and not transfers from one entrepot to another. It is a curious fact, however, the two shipments were made from this port to the United States during the past summer, one consisting of about 40,000 bags and the other about 40,000 bags, the two being valued at something over \$2,000,000. These shipments were made by a banking institution which had advanced a large sum of money on the valorised coffee. There is no question that if a large part of the stock on hand were suddenly put on the market the prevailing high prices would be materially reduced. When the coffee is withdrawn for sale the import duty, amounting to 11.9 cents per pound, must, of course, be paid.

(To be continued.)